A COMPARATIVE STUDY OF ACTIVE MANAGEMENT OF THIRD STAGE LABOR WITH CONVENTIONAL METHOD IN PREVENTION OF PPH IN AT RISK MOTHERS

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CERTIFICATE

Certified that this dissertation entitled **"A COMPARATIVE STUDY OF ACTIVE MANAGEMENT OF THIRD STAGE LABOR WITH CONVENTIONAL METHOD IN PREVENTION OF PPH IN AT RISK MOTHERS"** is a bonafide work done by **Dr. J. ANURADHA, M.D.,** Post Graduate Student of OBSTETRICS AND GYNAECOLOGY, under my overall supervision and guidance at the Institute of social Obstetrics and Government Kasturba Gandhi Hospital for Women and Children, Madras Medical College and Research Institute, Chennai, in partial fulfillment of regulations of Tamilnadu Dr. M.G.R. Medical University for the award of M.D degree in Obstetrics and Gynaecology during the academic year 2005 - 2008.

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CONTENTS

INTRODUCTION

The third stage of labor refers to the period following the delivery of the fetus to the delivery of placenta.

Relatively little thought or teaching seems to be devoted to the third stage of labor compared with that given to first & second stages. A leading North American obstetrics text devotes only 4 of more than 1500 paper to third stage of labor but significantly more to the complications that may arise immediately following delivery (Cunningham, 2001)[1].

One author states, “This indeed is the unforgiving stage of labor and in it there lurks more unheralded treachery than in both the other stages combined. The normal case can, within a minute, become abnormal and successful delivery can turn swiftly to disaster” (Donald, 1979)[2].

About 5.29 lakh mothers die in child birth every year in the world (WHO, 2004). Maternal mortality and morbidity is 50 times more common in developing countries than in developed countries (Kwast et al, 1986)[3]. According to WHO report 2004, maternal mortality ratio are shown as MMR per 1 lakh Live Birth.

Region	MMR	No of Maternal death
World average	400	529000
Developed Countries	<20	2500
Asia	330	253000
Africa	830	251000
Latin America	190	22000
Oceana	240	530
India	307	136000

MMR in South East Asia

Srilanka	30
China	115
Thailand	200
Pakistan	340
India	307
Bangladesh	850

With 16% of world's population, India counts for over 20% of world's maternal death. The maternal mortality ratio is incredibly high at 307/100,000 LB which is unacceptable when, other health and economic indicators are showing an upward trend in India[4].

WORLD HEALTH REPORT 2005

'Make every mother & child count'

'More than half a million women will die in pregnancy, childbirth or soon after that. Reducing the toll in line with the Millennium Development Goal depends largely on every mother having right to access to health care.

According to WHO 2005, contributors to maternal mortality ratio are

PPH	25%
Infection	13%
Anemia	19%
Eclampsia	12%
Obstructed labor	8%
Complication of abortion	13%
Others	9%

PPH remains the most common cause of maternal death in developing countries. The condition has not changed for over a century. WHO statistics suggest that 25% of maternal deaths are due to PPH accounting for more than 100,000 maternal deaths per year (Abouzahr,1998)[5]. The death of these mothers has serious complications for the newborn and any other surviving children.

There were nearly 1000 maternal deaths in Tamil Nadu in 2005-06 with a MMR of 92/100,000 live births out of which nearly 35% is due to hemorrhage (National Family Health Survey III).

Several complication encountered in the third stage of labor may lead to maternal morbidity. PPH leads to poor iron reserves, ultimately contributing to anemia. Anemia may cause weakness & fatigue. Hospitalization may be prolonged and establishment of breastfeeding may be affected. A blood transfusion may ameliorate the anemia and shorten the hospital stay, but it carries the risk of transfusion reaction and infection. Access to safe blood is not universal and PPH can sometimes strain the resources of the best blood bank. The primary aim in the management of PPH should be its prevention (Chamberlain 1992). Uterine atony remains the major cause of PPH. Adequate contraction & retraction of it is essential for prevention of PPH.

Active management of third stage of labor

(Reproductive Health Research, WHO, 2003)[4]

1. administration of oxytocics within 1 min of baby's birth
2. controlled cord traction with counter traction.
3. Uterine massage.

The Hinchingbrooke randomised controlled trial[6], reported in Lancet in 1998, and concluded that PPH was significantly lower in active management compared to expectant management (6.8% Vs 16.5% respectively). Bristol trial[7] demonstrated significant reduction in incidence of PPH with active management as compared to expectant management (5.9% Vs 17.9%).

Active management of 3rd stage of labor with prophylactic oxytocics, controlled cord traction and uterine message has made the III stage of labor less hazardous. Careful vigilance during the short interval between the delivery of baby and placenta will go a long way in decreasing retained placenta with its attendant risks. Though active management of labor has become a routine in most of the centers, in this part of country, 3rd stage of labor is still managed by conventional methods in many places unless the patient's condition warrants prophylactic intervention. This preliminary study was undertaken to analyse the superiority or otherwise of active management of 3rd stage of labor Vis a Vis conventional method of giving IV methylergometrine after delivery of placenta.

REVIEW OF LITERATURE

The traditional conservative attitude to the management of third stage is changing. Recently, the decrease in the complication of third stage of labor has been attributed to wider judicious use of oxytocic preparations and a change from expectant conservatism to an intelligent active intervention.

Brandt (1983)[8] explained the mechanism of separation and expulsion of the placenta in detail. Brandt's technique consisted of clamping the umbilical cord close to the vulva, immediately after the delivery of the infant. The uterus is palpated gently without massage to determine whether firm contractions are occurring. After several uterine contractions a change in size and shape of uterus indicates separation of placenta. Then the clamp at the vulva is held firmly with one hand and the finger tips of the other hand are placed on the abdomen and pressed between the fundus and symphysis pubis to elevate the fundus. On doing so, if placenta is separated the cord will extrude into the vagina. Further elevation of fundus and traction of cord deliver the placenta.

Andrews (1940)[10] working independently described a similar method of expulsion of placenta and obtained good results. Brews (1948) Gibbard (1955) allowed fundal pressure on the uterus as a method of

assisting the delivery of separated placenta. Browne and Mccluse (1955) pointed out that Crede's method can cause shock.

The Brandt – Andrews technique was described by De-Lee, Greenhill (1947)[32] and advocated because the Crede's method has potential dangers.

Norman Kimbell[11] modified the technique. Instead of using a hand to grasp the umbilical cord he used forceps. The modified technique is as follows: A pair of forceps is placed on the umbilical cord as close to the vulva. One hand grasps the forceps and the other hand is placed on the abdomen. The uterus is gently pressed backwards and upwards towards umbilicus, at the same time steady traction given on the umbilical cord.

Picton (1951) advocated Brandt Andrew's technique for conducting the normal third stage. He advised IV Ergometrine with the birth of anterior shoulder. Those who have used Brandt-Andrews technique extensively and advocate its routine use are Dee-Lee (1947), Picton (1951), Kimbell (1958), Greenhill (1960), Clyne (1963), Brews (1963), Donald (1964), Hibbard (1964). Others favoring Brandt-Andrews method are Morris (1951), Elwin (1960), Frader and Tatford (1961), Shaw (1949), and Tritch and Schneider (1945). Naidu et al (1955)

described Brandt-Andrews method as safe, simple and free from danger of inversion.

Spencer (1962)[12] has modified Brandt-Andrews method by combining it with an oxytocic given intravenously at the time of delivery of the anterior shoulder and replaced the term to controlled cord traction.

Lister (1950)[13] and Martin and Dumoulin (1955) established that intravenous ergometrine given with the birth of head or anterior shoulder reduces the risk of hemorrhage but has some disadvantages. The injection has to be precisely timed and it requires the presence of a second attendant at the time of delivery. Intramuscular ergometrine is less satisfactory mainly because it is slower in action (Embrey, 1961), but it has been advocated by Duly (1951) who reported a considerable improvement on physiological management of third stage.

Kimbell (1954, 1958)[11] added hyaluronidase to the intramuscular injection to speed up the action of ergometrine. He reported very good results and these were confirmed by Dutton (1958).

Embrey and his collegues (1963)[14, 15] have shown that a mixture of syntocinon and ergometrine acts more quickly than ergometrine and hyaluronidase and it is more effective when given by intramuscular injection. There seems to be tendency when ergometrine is given earlier,

for the placenta to be retained either by generalised contraction or an hourglass contraction of uterus. In all reported series the manual removal of placenta is over 1%. Davis and Boynton (1942)[17] met with retained placenta in 0.8% of cases which necessitated manual removal of placenta as Credes's expression. Shaw (1949) did not find any significant difference between control and study cases after administration of ergometrine. Schade (1950) reported an insignificant percentage of complications. Bose (1955) reported retained placenta in 2.5 percent of his cases. Naidu (1955)[18] also feels satisfied with the results of this drug as there was almost a complete absence of retained placenta.

Methyl ergometrine (methergin) is a superior drug than ergometrine in reducing the duration of third stage as quoted by Riordan (1950) and Cruden(1953). Methyl ergometrine is one and half times stronger in its oxytocic effects than ergometrine (Gill, 1947).

Leff(1952) used synthetic preparations of oxytocin in combination with methyl ergometrine and a few have used it separately. In the whole series pitocin stands equally but in no way better than methyl ergometrine.

Intravenous ergometrine acts in 45 seconds, intramuscular ergometrine in 7 minutes, and intramuscular ergometrine with hyalse 4

minutes 47 seconds. Embrey found that after ergometrine, there was a well marked uterine spasm for 45 minutes, followed by evidence of contraction for 3 hours.

Fleigner – JR (1978)[19,20] compared the advantages and disadvantages of the traditional method versus the use of controlled cord traction. It is recommended that ergometrine (0.25mg) be administered intravenously after delivery of the baby and the exclusion of a second twin.

Djahanhakhch and Vere (1978)[21] recommend the intramuscular use of oxytocic agents for prophylactic management of the third stage of labor. Van-Coeverden (1982)[22] introduced a revised scheme of management of third stage of labor. Patients received synthetic oxytocin 5 IU intramuscularly with the delivery of the anterior shoulder and ergometrine maleate 0.5 mg intramuscularly after delivery of the placenta. In this study a significant decrease in the incidence of post partum hemorrhage and retained placenta was observed.

Heinonen et al (1985)[23] stressed upon the pharmacologic management and controlled cord traction in the third stage of labor. The work comprised of active management of the third stage of labor over a period of 15 years, consisted of intramuscularly administered

combination of ergometrine(0.2 mg) and oxytocin(5 units) and controlled cord traction as mechanical assistance in delivery of the placenta

Thornton et al (1988)[25] compared the natural and active management of third stage of labor and plasma oxytocin during third stage of labor. They have recommended routine administration of intramuscular oxytocin during the third stage

Elbourne D(1988)[26] stressed the fact that prophylactic use of oxytocics reduces the risk of post partum hemorrhage by about 40% based on the evidence from controlled trials.

Candussi – G (1989)[27] compared the use of oxytocin and ergometrine maleate and stated the usefulness of both drugs in the active management of the third stage of labor.

Poeschman – RP[28] et al made a randomized comparison of oxytocin, sulprostone and placebo in the management of the third stage of labor. The effects on post partum blood loss, following prophylactic administration of oxytocin and sulprostone were compared. Postpartum blood loss was reduced almost equally by about 35% by both oxytocin and sulprostone. Mean length of third stage was short in both groups receiving the active treatment.

Prendiville et al., Harding et al., in 1988[7] in the Bristol trial compared the efficacy of Active Management of Third stage Labor with Expectant Management. The rate of PPH was high in control than in Active Management of Third stage Labor even in low risk group (17.9% Vs 5.91%). Duration of third stage labor (15min in Expectant Management Vs 5 min in Active Management of Third stage Labor), blood loss in third stage and need for therapeutic oxytocics (2.9.7% Vs 6.4%) was also high.

Rogers et al., Wood et al., (1998)[6] in Hinchingbrooke RCT compared the rate of primary PPH and long term consequences between Active Management of Third stage Labor and EMTL group, in women at low risk for PPH. They found a significant reduction in the rate of PPH (6.8% in Active Management of Third stage Labor Vs 16.5 % in Expectant Management).

Thilaganathan et al (1993) in U.K.[30] compared Active Management of Third stage Labor Vs Expectant Management in low risk women. The duration of third stage was significantly longer in Physiological group. But there was no significant difference in estimated blood loss.

The Cochrane systemic review (2000)[29B] identified 5 RCTs comparing Active Management of Third stage Labor with Expectant

Management. Active Management was associated with a reduced risk of PPH and severe PPH, a shorter third stage, a reduced risk of anemia, a decreased need for blood transfusion and a decreased need for additional uterotonics. It was associated with increased risk of maternal nausea, vomiting and elevated BP.

David Chelmov et al, (2004)[31] studied the efficacy of active management. IV oxytocics given after delivery of placenta were taken as control. Active management significantly reduced the risk of PPH, postpartum hemoglobin level, need for transfusion and additional medication. There was no significant difference in the need for manual removal of placenta.

Joshua et al in 2005[34] showed that active management of third stage labor was effective in reducing the postpartum blood loss, and the rate of PPH in rural American Indian women.

Tsu et al, Mai et al (2006)[36] in Vietnam, studied the effectiveness of Active Management of Third stage Labor using Government midwives. Active Management of Third stage Labor was associated with reduced risk of prolonged third stage beyond 30 min, supplemental oxytocin and bimanual compression. Active Management of Third stage Labor was associated with 34% reduction of PPH.

Maughan et al., in 2006[35] showed that Active Management of Third stage Labor provides a better balance of benefits and harm (evidence level A) as compared to other conventional methods (giving uterotonics with delivery of anterior shoulder or after delivery of placenta, with evidence level of B)

Fullerton et al., Frick et al., in 2006[37] in Guatemala and Zambia studied the net benefit of using Active Management of Third stage Labor rather than Expectant Management. A positive net benefit is from Active Management of Third stage Labor with a net saving of $18000 US in Guatemala (with 100 lives saved) & US $ 145000 in Zambia (with 467 lives saved for 100000 births.

THIRD STAGE OF LABOR

Physiology of third stage of labor

The 3rd stage of labor commences with delivery of the infant and ends with delivery of the placenta. Mean length is 6 minutes and the 97 th percentile is 30minutes.

Physiological mechanism in the delivery of the placenta

Uterine contractions continue after the birth of infant and intrauterine pressure continues to be rhythmically raised. After delivery of the infant the uterine muscle contract and retract with resultant shortening of the upper segment. This shortening reduces the area of the uterine surface to which the relatively incompressible placenta is attached. Separation of placenta occurs as a result of retraction and the consequent reduction in intra uterine volume tends to force the placenta in to the relaxed lower segment (Mac person & Wilson 1965). When the separation is complete, placenta is forced into the vagina and it may be delivered spontaneously by maternal efforts.

The continued retraction of the uterine muscle is of paramount importance in minimizing the blood loss. The blood vessels supplying the placenta site are compressed by the oblique fibers of the middle layer of

myometrium, “the living ligatures” (Basket, 1999)[39].Blood flow through the placenta at term is 700 ml/mt. This has to be arrested within seconds following placenta separation otherwise serious hemorrhage will occur.

Any factor that hinders uterine contraction and retraction, predisposes to hemorrhage. E.g. atony of uterus, due to antepartum hemorrhage, over distended uterus and prolonged labor.

Mechanism of placental separation

In Matthew Duncan method the lower edge of placenta present first at the vulva, there is marginal separation of placenta.

In Schultz method (more common) the placenta is delivered like an inverted umbrella the fetal surface appearing first with membrane covering the maternal surface.

Signs of placental Separation

(Sleep 1993, Cunningham 2001)[1]

a) The most reliable sign is lengthening of the umbilical cord as the placenta separates & is pushed into the lower segment by progressive uterine retraction.

b) The uterus becomes more globular and firmer.

c) The uterus raises in the abdomen .The descent of placenta into lower segment and into vagina, displaces the uterus upward.

d) The gush of blood occurs.

Management of III stage of labor

1. Expectant Management (Physiological)

- awaiting the spontaneous separation of placenta, ensure that uterus is firmly contracted.
- Mother is asked to bear down & placenta is delivered by gravity
- Oxytocics are not used or used after delivery of placenta.
- If placenta is not delivered spontaneously, wait and try putting baby to breast & encourage maternal effort.
- Measures such as nipple stimulation or postural changes may be employed.

2. Active Management. (Reproductive Health Research, WHO, 2003)[4], [FIGO, 2005]

- Administration of uterotonic agents within 1min of delivery of baby.

- Controlled cord traction with counter traction.

- Uterine massage after delivery of placenta.

Active management was first described by Thilaganathan & collegues in 1998[38].

Components of active management

1. Uterotonic agents.

Within one min of delivery of baby palpate the abdomen to rule out additional baby and give any one of these

a. Oxytocin 10 1U IM

b. Ergometrine 0.2mg IM/IV

c. Syntometrine (1ampule) IM [0.5mg of ergometrine +5u oxytocin]

d. Misoprostol 40-600 mcg orally

Prophylactic Methylergometrine is known to increase BP, hence avoided in PIH & cardiac disease.

2. Controlled cord traction:

- Clamp the cord close to the perineum using sponge forceps. Hold the clamped cord and the end of forceps with one hand.

- Place the other hand just above the woman's pubic symphysis and stabilize the uterus by applying counter traction during Cord traction. This helps prevent inversion of uterus.

- Keep slight tension on the cord and wait for a strong uterine contraction (2-3min)

- When uterus becomes rounded or cord lengthens, very gently pull downward and backward on the cord to deliver the placenta. Do not wait for gush of blood before applying traction on the cord. Continue to apply counter traction to the uterus with other hand.

- If placenta does not descend during 30-40seconds of Controlled Cord Traction (i.e. no signs of separation) do not continue to pull the cord. Wait for next contraction.

- With next contraction, repeat Cord traction with counter traction.

- As placenta delivers, the thin membranes can tear off. Hold the placenta in two hands and gently turn it until the membranes are twisted. Slowly pull to complete the delivery.

- If membranes tear, gently examine the upper vagina & cervix wearing high-level disinfected gloves & use a sponge forceps to remove any pieces of membrane that are present. Carefully examine the placenta for missing cotyledons or membranes

If delivery of placenta is not achieved within 20-30mins, one should be ready for manual removal of placenta.

If portion of maternal surface is missing or there are torn membranes with vessels suspect retained placenta.

3. Uterine massage

- Immediately after delivery of the placenta, massage the fundus of uterus until the uterus is contracted.
- Palpate for a contracted uterus every 15min & repeat uterine massage as needed during the first 2 hrs.
- Ensure that uterus does not become relaxed (soft) after uterine massage is stopped.

When the oxytocic is not given until after the delivery of the placenta, it is necessary to relay on spontaneous uterine contraction for the complete separation from its attachment & then expel into vagina. Contractions are ineffective sometimes, hence there is a risk of hemorrhage with partial separation of placenta.

AIM OF THE STUDY

To compare the efficacy of active management of third stage of labour with conventional method in reducing the blood loss during the third stage of labour in mothers at risk for PPH.

MATERIALS AND METHODS

Study design : Prospective case control study.

Place of Study : Department of Obstetrics and Gynecology at the Institute of Social Obstetrics and Govt. Kasturba Gandhi hospital for women and children, Chennai.

Study period : August 2006 to September 2007.

Study population : All women delivered vaginally at Govt. Kasturba Gandhi Hospital during the study period were recruited for the study based on the inclusion and exclusion criteria.

The study was approved by the hospital ethical committee.

Inclusion criteria

Following were the inclusion criteria on the basis of which the patients were included in the study.

- Over distended uterus as in big baby, multiple pregnancy, hydramnios.
- High parity (5 and above)

- Abruptio placenta
- Chorio amnionitis
- Prolonged use of oxytocin
- Previous H/O PPH
- Anemia

Exclusion criteria

Patients with following risk factors were excluded from the study.

- Heart disease
- Epilepsy
- Severe anemia
- Traumatic PPH
- Hepatic disorders

Sample size : total of 225 patients were selected and allotted into 2 groups.

Group I

- Consists of patients who were given oxytocics within one minute of delivery of the baby followed by
- Controlled cord traction with counter traction and
- Uterine massage.

Group II

- Consists of patients who were allowed for Spontaneous delivery of placenta.
- And were given 0.2 mg methylergometrine intravenously after delivery of placenta.

Group I included 150 patients and Group II included 75 patients.

The following factors were noted in all patients:

i) Detailed history including age, parity, socioeconomic class, booking status and medical disorders if any

ii) Physical examination – systemic examination and per abdomen examination.

iii) Pulse rate and blood pressure at the time of admission into labor ward and after delivery of placenta.

iv) Onset of labor

v) Duration of I and II stage labor.

vi) Nature of delivery.

vii) Assessment of general condition of the patient immediately after delivery,

viii) Uterine contour.

ix) Duration of third stage labor: Time taken for the separation of placenta from the time of administration of oxytocics in group I

and from the time of cord clamping in group 2 was taken as third stage duration. The lengthening of extravulval portion of cord was taken to indicate placental separation.

x) Blood loss in the third stage of labor: Immediately after delivery of the baby when all liquor has drained out, the patient was brought to the edge of the table where an inflated Kelley's pad was kept ready to place under the patient's gluteal region. The lower end of pad was inserted into a measuring jar of 2 l capacity with 20 ml graduation. After 20 – 30 minutes, the clots in jar were weighed separately and added to the blood in jar. The average immeasurable blood loss due to episiotomy was taken as 50 ml (from the average calculated from normal vaginal delivery with episiotomy) same not included in blood loss calculated. Similarly when there was profuse bleeding from episiotomy, such patients were excluded.

xi) The change in hemoglobin concentration following delivery by measuring the baseline hemoglobin soon after patient is admitted with labor pain to ward and repeating it 24 hours after delivery by Sahli's hemoglobin estimation method.

xii) Other intervention, if any

xiii) Need for additional oxytocic therapy and blood transfusion if any were noted.

xiv) Side effects of the methyl ergometrine like rise in blood pressure, nausea or vomiting if any was noted.

xv) Other complications like retained placenta, and uterine inversion if any was noted.

Statistical methodology : All the above parameters were assessed and the data analysed using paired t test and chi-square test. A “p” value of < 0.05 was taken as statistically significant.

OBSERVATION

TABLE I: AGE DISTRIBUTION n=225

Sl. No	Age	AMTL		Conventional	
		No of cases	%	No of cases	%
1	< 20	3	2	3	4
2	21-25	51	34	24	32
3	26-30	75	50	36	48
4	31-35	12	8	6	8
5	>35	9	6	6	8

- Most of the patients in both study and control group were in the age group of 20-30 years (80-85%)
- 2% cases in study group and 4% cases in control group were in the age group of less than 20 years.
- 8% in control group and 6% in study group were above 35 years.

TABLE II: BOOKING STATUS n= 225

Sl. No	Booking status	AMTL		Conventional	
		No of cases	%	No of cases	%
1	Booked	147	98	75	100
2	Un booked	3	2	-	-

- 98% of the patients were booked though they were selected at random.
- All the patients in the control group were booked

TABLE III: SOCIO ECONOMIC STATUS n= 225

Sl. no	Socioeconomic status	AMTL		Conventional	
		No of cases	%	No of cases	%
1	I	-			
2	II	-			
3	III	-			
4	IV	18	12	12	16
5	V	132	88	63	84

- 88% of cases in study group and 84% of control group belonged to class V socio economic status.

TABLE IV: DISTRIBUTION OF PARITY n = 225

Sl. No	Gravida	AMTL		Conventional	
		No of cases	%	No of cases	%
1	Gravida 1	18	12	9	12
2	Gravida 2	51	34	24	32
3	Gravida 3	54	36	27	36
4	Gravida 4 & Above	27	18	15	20

- 12% of study and control group were primi.
- Most of the cases were multiparas.
- 18% of study and 20% of control group were grand multipara.

TABLE V: RISK FACTORS n = 225

Sl.no	Risk factors	AMTL		Conventional	
		No of cases	%	No of cases	%
1	Over distended uterus	63	42	30	40
	a. big baby	24	16	12	16
	b. Hydramnios	15	10	6	6
	c. Multiple pregnancy	24	16	12	12
2	Prolonged labour	18	12	9	12
3	Anemia	42	28	21	28
4	Grand multi	27	18	15	20

- The major risk factor in both study and control group was over-distended uterus (40-42%) followed by anemia (28%), grand multipara (18-20%). Prolonged labor forms the remaining (12%)

TABLE VI: ONSET OF LABOUR n = 225

Sl. No	Onset of labor	AMTL		Conventional	
		No of cases	%	No of cases	%
1	Spontaneous	102	68	51	68
2	ARM and oxytocin	21	14	12	16
3	PGE_2 alone	12	8	6	8
4	PGE_2 and oxytocin	15	10	6	8

- Most of the cases (68%) had spontaneous onset of labour.
- In the remaining (32%) labor was induced with ARM and oxytocin or with PGE_2 gel alone or with PGE_2 gel and oxytocin.

TABLE VII: NATURE OF DELIVERY n=225

Sl.no	Nature of delivery	AMTL		Conventional	
		No of cases	%	No of cases	%
1	Labour Natural	78	52	42	56
2	LN with Episiotomy	33	22	15	20
3	Instrumental Vaginal Delivery	39	26	18	24

- More than half the cases (52-56%) had normal vaginal delivery.
- 24-26% of the cases had instrumental vaginal delivery either vacuum extraction or forceps.
- In all these patients, traumatic PPH had been ruled out.

TABLE VIII DURATION OF III STAGE OF LABOUR n= 225

Sl.no	Duration of III stage (in minutes)	AMTL		Conventional	
		No of cases	%	No of cases	%
1	< 2.5	57	38	-	
2	2.5-5	69	46	12	16
3	5-7.5	18	12	18	24
4	7.5-10	3	2	30	40
5	> 10	3	2	15	20

Chi square value = 18 p value <0.001

- In 84% of cases in study group, the duration of third stage of labor was less than 5 minutes where as 12% of control the duration of third stage labor was less than 5 minutes.

- In about 60% of control group, the duration was more than 7.5 minutes. Only 4% of study group the duration was more than 7.5 minutes.

TABLE – IX DURATION OF III STAGE LABOR

STATISTICAL ANALYSIS n=225

Sl.no	Group	No. of cases	Mean duration in minutes	S D	't' Value	'p' Value
1	AMTL	150	3.72	2.65	8.6	<0.001
2	Conventional	75	9.58	4.79		

- Mean duration of third stage labor in study was 3.27 min and in control was 9.58 min.
- The difference in the mean duration of third stage of labor was 6.31 min.
- There is a statistically significant reduction in duration of third stage labor ($p<0.001$)

TABLE -X: AMOUNT OF BLOOD LOSS n= 225

Sl.no	Amount of blood loss in ml	AMTL		Conventional	
		No of cases	%	No of cases	%
1	< 100ml	24	16	-	-
2	101-200	57	38	9	12
3	201-300	42	28	12	16
4	301-400	15	10	15	20
5	401-500	9	6	21	28
6	501-1000	3	2	15	20
7	> 1000	-		3	4

Chi square value = 35 p value <0.001

- 16% of cases in study group had blood loss of less than 100ml. All the patients in study group had blood loss of more than 100ml.
- 2% of cases in study group had blood loss of >500ml. None >1000ml.
- 24% of case in control group had blood loss of >500ml of which 3 (4%) had blood loss of >1000ml.

TABLE XI:

BLOOD LOSS – STATISTICAL ANALYSIS n= 225

Sl.No	Group	No of cases	Mean in ml	S D	't' value	'p' value
1	AMTL	150	221.2	131.14	8.29	<0.001
2	Conventional	75	395.5	217.56		

- The difference in the mean blood loss between the study and control group was 174.5 ml.
- The mean blood loss in study and control group are 221.2 ml and 395.5 ml respectively.
- There is a statistically significant reduction in the amount of blood loss. ($p<0.001$).

TABLE XII: RISK FACTORS AND BLOOD LOSS n= 225

Sl.no	Risk factor	Blood loss (ml)	
		AMTL	Conventional
1	Overdistended uterus	219	382.01
2	Prolonged labour	405.78	541.00
3	Anemia	130.0	263.71
4	Grand multi	185.91	311.89

- Mean blood loss was maximum in patients with prolonged labor, followed by cases with over distended uterus and grand multipara.
- Most of the patients with prolonged labor had blood loss of over 500 ml unless managed actively.

TABLE XIII: HEMOGLOBIN DIFFERENCE (Hb%) n=225

Sl.no	Hb difference in g/dl	AMTL		Conventional	
		No of cases	%	No of cases	%
1	< 0.75	63	42	6	8
2	0.75 – 1.5	72	48	21	28
3	1.5 – 2.25	12	8	30	40
4	2.25-3	3	2	15	20
5	> 3	-	-	3	4

Chi square value = 20 p value <0.001

- Most of the study group (90%) had a hemoglobin difference of <1.5g/dl.
- Most of the control group had a hemoglobin difference of over 1.5 g/dl
- 3 patients in control group who had a blood loss of over 1000 ml had a hemoglobin drop of >3g/dl.

TABLE XIV: HEMOGLOBIN DIFFERENCE

STATISTICAL ANALYSIS n=225

Sl. no	Group	Mean Hemoglobin fall	S D	't' value	'p' value
1	AMTL	0.87	0.49	9.01	<0.001
2	Conventional	1.7	0.72		

- Mean Hemoglobin difference in control group was 0.87 gm%.
- Mean Hemoglobin difference in study group was 1.7 gm%.
- Mean Hemoglobin difference between study and control group was 0.83 gm% which is of statistical significance.

TABLE XV: NEED FOR ADDITIONAL INTERVENTIONS

Sl.No	Intervention	AMTL		Conventional		Chi square value	p value
		No of cases	%	No of cases	%		
1	Medical (additional oxytocics)	8	6	21	28	107	<0.0001
2	Surgical B lynch Internal iliac artery ligature Hysterectomy	1 1 -	0.6	6 5 1 -	8	10.9	<0.0009
3	Blood transfusion	3	2	18	24	39	<0.0001

- 6% of cases in study group 28% of cases in control group required additional oxytocics either in the form of 10-20IU of oxytocin infusion or $PGF_{2\alpha}$ 250 mcg IM.
- 6 patients whose uterus was still atonic even after adequate oxytocics underwent B-Lynch suturing to control the hemorrhage.
- One patients in the control group underwent internal iliac artery ligation as they had bleeding even after B-Lynch.
- All the patients with PPH needed blood transfusion in the immediate post partum period

TABLE XVI: ANALYSIS OF COMPLICATION;

POSTPARTUM HEMORRHAGE.

Sl. no	Group	Post Partum Hemorrhage	%
1	AMTL	3	2
2	Conventional	18	24

Chi square value = 39 p value<0.0001

- The incidence of PPH (Blood loss >500 ml) in the study group was 2%.
- In the control group it was 24 %.
- 3 cases in the control group had severe PPH (Blood loss >1000 ml).
- None in study group had severe PPH.

TABLE XVII: SIDE EFFECTS n= 225

Complications	AMTL		Conventional	
	No of cases	%	No of cases	%
Nausea	9	6	6	8
Vomiting	6	4	3	4
Rise in BP	21	14	12	16
Inversion of uterus	-		-	
Retained placenta	-		-	

- Most common side effect noted in the patients studied was increase in blood pressure (10-20mm Hg either systolic or diastolic or both).
- Less than 10% of the cases had nausea and vomiting.
- None of the cases had retained placenta or uterine inversion in both the groups

TABLE XVIII: FETAL WEIGHT **n=261**

Sl. No	Birth weight	AMTL		Conventional	
		No of case	%	No of case	%
1	<2 Kg	26	14.9	14	16.1
2	2-3 Kg	88	50.6	45	51.7
3	3-4 Kg	44	25.3	20	23
4	>4 Kg	16	9.2	8	9.2

- 36 twin pregnancies resulted in the increase in the number of new born.
- Most of the babies were appropriate for gestational age.
- Multiple pregnancies and anemia complicating pregnancies resulted in more number of Low Birth Weight babies. Pre term labor is an important contributing factor to this.

TABLE XIX: NEONATAL COMPLICATIONS n=261

Sl. No	Fetal outcome	AMTL		Conventional	
		No of case	%	No of case	%
1	Pre term	36	20.7	18	20.7
2	Respiratory distress	22	12.6	11	12.6
3	Low birth weight	41	23.6	20	23
4	Large for dates	16	9.2	8	9.2
5	NICU admission	44	25.3	21	24.1

Chi square value = 2 p value = 0.9

- Some of the babies had more than one complications like low birth weight and preterm.
- Some of the preterm babies also had respiratory distress.
- LGA babies were admitted for observation.
- There is no significant difference in Neonatal morbidity in both the groups.

DISCUSSION

This randomized control trial comparing the efficacy of active management of third stage labor with conventional methods in the prevention of PPH was undertaken in 225 patients who had any of the risk factors of PPH.

The results are as follows:

Table 1: Most of the patients in this study were in age group 20 – 30 yrs (80 – 84%) Advancing maternal age is related to increased risk of death due to hemorrhage (Callaway et al, 2005).[40] Incidence of PPH is higher in women under the age of 20 years (Ian Donald).[41]

Table 2: 98% of study group and all in control group were booked. Due to the increased awareness through media and dedicated health personal and increased availability of facilities within their reach made every women have a regular AN check up.

Table 3: Since ours is level III referral unit catering to below poverty line population, all the patients were in socioeconomic class of either IV (12 – 16%) or V (84 – 88%)

Table 4: 12% were primigravida and 34 – 32 % were second gravida 36% were third gravida and 18-20% were multi gravida.

Multiparity is the most common cause of PPH (Ian Donald).[41] Nulliparity is a risk of PPH with an odds ratio of 1.5 (Combs et al).[42] Fuchs and collegues (1985):[43] incidence of PPH in para 4 or more (2.7%), increased 4 fold compared with general population. Babinski (1999):[44] In low parity the incidence was 0.3% and in para 4 or more it was 1.9%. Feeney et al[45]: incidence of PPH in grand multipara is 13% In our study, one grand multipara in the control group had PPH

Table 5: 44% of study group had over distended uterus (Big Baby – 16%, Hydramnios 10%, multi pregnancy 16%). 12% had prolonged II stage, 28% had anemia. According to various literature: PPH occurred in 2-11% of all deliveries (Newton 1961)[47.] 20% of women have no risk factor for PPH (Varner, Metal)[49] PPH was reported to occur is 6 – 22% of twin deliveries (Newton 1986). Recurrence of PPH is 25% (Dew Hurst, CJ et al).[33] Incidence of PPH in twin pregnancy is high with an odds ratio of 3.3 (Combs 1991)[42]. Conde Agudelo[53] and co-workers (2000) showed that PPH was increased 2 fold in twin pregnancy.

Table 6: 68% of study group & 70% of controls had spontaneous onset of labor. In the remaining cases labor was induced with either ARM & Oxytocin, PG E_2 gel or PG E_2 gel with Oxytocin. Induced labor is 2.2 times more prone for PPH. Augmented

labor is a high risk for PPH with an odds ratio of 1.7 (Combs 1991)[42]. Oxytocin more common cause of PPH than prostaglandin gel. PPH is more common in induced or augmented labor (Kaster et al).[48]

Table 7: 74% of study group had normal vaginal delivery. 26% of cases had instrumental vaginal delivery. (12% vacuum, 14% Forceps). Incidence of atonic PPH was 7.3% in vacuum and 12.5% in forceps deliveries (Williams et al 1981)[51]. Forceps and Vacuum has increased risk of PPH with an odds ratio of 1.7 (Combs 1991).[42] In this study the incidence of atonic PPH was 7.6% with instrumental vaginal delivery.

Table 8: In 84% of study group & 28% of control, the duration of third stage was less than 5 min. In most of the patients in the control group (72%) the duration of third stage labor was > 5 min. 2% of the study group who were induced with PGE_2 gel, had third stage duration of 15-20 minutes. 20% of the control group had III stage duration more than 10 min and they were either multipara or had induced labor. 4 patients in the control group had III stage duration more than 20 min and they had both prostaglandin gel and oxytocin drip during the first stage of labor. Duration of third stage labor is longer with induced labor, multiparity, preterm delivery and small placenta. (Adelusi et al 1997).[52] Laros 1991[53] studied 12,275 singleton vaginal

deliveries. Median III stage duration is 6 min and for 3.3% of these women it was more than 30 min.

Table 9: The mean duration of III stage labor in study group was 3.72 min and in control was 9.58 min. This difference in the duration of III stage labor is statistically significant. ($p<0.001$)

- Cochrane review 2002[29B] showed that the III stage duration is significantly shortened (80%) in Active group as compared to the physiological group with a relative risk of 0.18 and 95% confidence interval of 0.14-0.24.

- In the Bristol trial[7] the mean III stage duration was 5min in Active and in physiological group it was 15 min which was statistically significant with a p value of <0.001.

- In Hinchingbrooke trial[6] the mean III stage duration was 8 min in Active group and 15 min in physiological group with a p value of <0.001.

- Thilaganathan et al[38] showed that the duration of third stage was significantly longer in physiological group with a p value of <0.001.

- Tsu et al[36] had a 80% reduction in the III stage duration with Active Management of Third stage Labor with an odds ratio of 10.20, 95% confidence interval 0.11-0.35.

- Prendiville et al[29A] showed that the mean difference was -9.77 min with a confidence interval of -10 to -9.53.

Table 10: 54% of study group and only 12% of control had blood loss of less than 200ml. About 64% of the control group had blood loss of > 400ml as compared to 8% in study group.

- In our study average blood loss in normal labor was 143 ml and 290 ml in study and control group respectively and average blood loss in instrumental delivery was 237 ml and 405 ml in study and control group respectively.

- Wallace (1967)[55] showed that average blood loss with forceps was 400 ml and following normal vaginal delivery was <300 ml.

- 4% of the women had blood loss of >1000 ml. All of them were treated with prostaglandin gel and oxytocin.

- Pritchard and associates (1962)[52] found that 5% of women delivering vaginally lost >1000 ml of blood.

- Life threatening hemorrhage occurs in 1 per 1000 deliveries (Lewis and Drife 1998)[53]

Table 11: The mean blood loss in study group was 221 ml and in the control group, it was 395 ml. Thus the reduction in blood loss

with active management of third stage labor is statistically significant ($p<0.001$)

- Pendiville et al[29A] showed that difference in mean blood loss was -79.33 ml with a 95% confidence interval of -94.39 to -64.37.

- Thilaganathan et al[38] showed no significant reduction in the blood loss ($p>0.5$).

- Joshua et al[34] had a statistically significant mean difference of -75 ml ($p<0.02$). the blood loss in the active group was 355 ml and in physiological group, 430 ml.

- In our present study the mean difference was -174 ml. A further reduction of blood loss in the active management group resulted in the increased mean difference compared to other studies.

Table 12: Blood loss was maximum in patients with prolonged labor followed by over distended uterus, grand multipara and finally the anemia group. Uterine exhaustion following prolonged labor is the principle cause of PPH (Ian Donald)[41]. Risk of PPH in prolonged labor is 12.5% (Freidman)[57]. Prolonged labor has an increased risk of PPH with an odds ratio of 2.9 (Combs 1991)[42]. Multiple pregnancy has 4.5 times increased

risk of PPH (Stones et al).[58] Birth weight of >4 kg is 1.9 times more prone for PPH (Stones et al).[58] The average blood loss was more in induced group (226 ml and 325 ml) than the spontaneous group (162 ml and 239 ml) in this study. Blood loss was more with induction (Combs et al, Kastner et al, Stones et al)[42,50,58]. As most of the cases with prolonged labor followed by those with overdistended uterus were induced with prostaglandin gel or oxytocin, this factor also contributed to more blood loss in this study.

Table 13: In this study the incidence of PPH was 2 % in study group and 24% in control group.

- In Hinchingbrooke trial[6] the incidence of PPH in active management group was 6.8% and in physiological group was 16.5% with an odds ratio of 2.42 and 95% confidence interval of 1.78-3.3. ($p<0.0001$)

- In the Bristol trial[7] the incidence of PPH was 5.9% with active management and 17.9% with physiological management whose odds ratio was 3.13 and 95% confidence interval of 2.3 -4.2.

- Predenville et al[29A] showed that incidence of PPH can be reduced by 30 – 40% with Active Management of Third stage of Labor.

- The meta-analysis of 5 trials in Cochrane review 2002[29B] showed a 60% reduction in incidence of PPH of >500 ml and PPH >1000 ml. Relative risk of 0.38 and 0.33 respectively and a 95% confidence interval of 0.32-0.46 and 0.21-0.51 respectively. For every twelve patient receiving active management rather than physiological management, one PPH was prevented.

- Tsu et al[36] showed a 34% reduction in incidence of PPH with an odds ratio of 0.66 and 95% confidence interval of 0.45-0.98.

- Poeschmann[28] et al showed a 35% reduction in incidence of PPH.

- The incidence of PPH in active and physiological group were 5% and 14% (Chelmov et al)[31]. In the trial by Joshua et al[34] it was 10% and 26% respectively.

- The incidence of severe PPH in this study was 0% and 4% respectively in the two groups. In the study by Chelmov et al[31] it was 0.9% and 3% respectively and in the one by Joshua et al[34] it was 1% and 6% respectively.

- The severe PPH in the 3 cases in this study was due to prolonged labor who also had induction. One delivered by labor natural, other two had instrumental vaginal delivery.

Table 14,15: Hemoglobin difference of < 1.5 gm was noted in 90% of cases in study group and 48% of cases in control group.

- In nearly 52% of the patients in control group the fall in hemoglobin was > 1.5 gm.

- Thus active management of third stage labor significantly reduces the maternal morbidity due to anemia.

- The maximum fall in hemoglobin in the study group was 2.75g/dl with a blood loss of 900 ml.

- The maximum fall in hemoglobin in the control group was 3.75g/dl with a blood loss of 1300 ml.

- Mean Hemoglobin difference was 0.87 gm and 1.7 gm in study and control group respectively which is of statistical significance.

- Cochrane systemic review 2002[29B]- identified a reduced risk of anemia in Active Management of Third stage of Labor as compared to Expectant Management (number needed to treat – 27).

- Chelmov et al[31] had 3% fall in Hemoglobin in Active Management of Third stage of Labor compared to 6% in physiological group.

- Joshua et al[34] had a mean hemoglobin decline of 1.7 vs 2.2 g/ dl ($p<0.001$). Hemoglobin decline was 5% and 27% respectively.

- Prendiville et al[29A] had a significant (60%) reduction in hemoglobin in the physiological group with a relative risk of 0.4 and 95% confidence interval of 0.29-0.55.

Table 16: 6% of cases in study and 24% of cases in control group needed additional oxytocics in the form of either 10-20IU of oxytocin infusion or PGF_{2ALPHA} 250 mg IM, which is of statistical significance ($p<0.0001$).

Therapeutic oxytotics	AMTL	Conventional
Bristol trial [7]	6.4%	29.7%
Hinchingbrooke[6]	3.2%	21.1%
Chelmov et al[31]	4%	17%
Thilaganathan et al[38]	0.9%	7%

Present study	6%	24%

- Tsu et al[36] had a significant need of additional oxytocic in the physiological group with an odds ratio of 0.68 and 95% confidence interval of 0.49-0.94.

- Cochrane meta-analysis[29B] showed a 80% reduction in the need for additional oxytocic with a relative risk of 0.2 and a 95% confidence interval of 0.17-0.25. (Number Needed to Treat = 7).

Surgical intervention: the need for surgical intervention is reduced significantly ($p<0.0009$).

- 6 patients with atonic uterus even after adequate oxytocics underwent B-Lynch suturing to control the hemorrhage.

- One patient in the control group underwent internal iliac artery ligation. In this patient atonicity persisted in spite of all medical management and in view of excessive bleeding internal iliac artery ligation was done.

- Surgical intervention due to uterine atony was more prevalent following prolonged labor (Kaster 1991)[50].

Blood transfusion: The need for blood transfusion was 2% and 24% in the active and conventional group respectively which is statistically significant ($p<0.0001$).

- In Hinchingbrooke[6] trial rate of blood transfusion was 0.5% and 2.6% in both the groups respectively with an odds ratio of 4.9 and 95% confidence interval of 1.68-14.25.

- In the Bristol[7] trial the rate of blood transfusion was 2.1% and 5.6% respectively with an odds ratio of 2.56 and 95% confidence interval of 1.57-4.19.

- Chelmov et al[31] needed 0.8% and 2% of transfusion in the two groups respectively.

- In the trial by Joshua et al[34] none of the active group needed blood transfusion. Blood transfusion in the other group was 3% ($p<0.01$)

- The higher percentage of blood transfusion in our study was due to the fact that most of our clients have a low prepregnant hemoglobin level and they enter pregnancy as anemic or borderline anemic. So they do not tolerate even the small amount of blood loss which is tolerated by an average western woman.

Table 17: In our study 6-8% of the cases had nausea and 4% had vomiting. 14-16% of the patients had rise in BP (10-20 mm of Hg) which soon returned to normal.

- Prendiville et al[29A] had an increased rate of nausea and vomiting in the active management group due to ergometrine. The rise in BP in this group was also due to ergometrine.

- Chelmov et al[31] also had an increased rate of nausea and vomiting due to ergometrine.

- Saraschandrika et al[59] reported no significant alteration in blood pressure in mild PIH patients when prophylactic methyl ergometrine was used.

Table18,19: The rate of admission to NICU is almost similar in both the groups in our study(p=0.9). No significant change in morbidity and mortality of the neonate (Prendiville et al[29A], Rogers et al[6]) The risk of pre term labor is increased in anemia complicating pregnancy (Klebanoff 1991, Liberman 1987)[53]. Scanlon 2000 showed there is a 1.3 -1.8 fold risk of Small for Gestational Age with anemia. Powers and Kiely (1994)[53] showed that twins accounted for 14% of LBW neonates. Kleinman (1991)[54] showed that the risk of asphyxia was 4-5 times that in singleton. Houlton (1981)[54] had a 50% risk of pre term and 25% risk of intrauterine growth restriction among twins.

SUMMARY

This present prospective case control study “Comparative study of efficacy of Active management of third stage labor versus conventional method of giving methylergometrine after delivery of the placenta in the prevention of PPH in at risk PPH mothers” was carried out at Institute of Social Obstetrics, Kasturba Gandhi Hospital, Madras Medical College, Chennai, during the period August 2006-July 2007. Total of 225 cases who had any of the risk factors for PPH were included in the study and were grouped into two categories.

The efficiency of active management of III stage labor and conventional method in reducing postpartum blood loss was compared. Results were statistically analysed.

- There was a statistically significant decrease in the duration of III stage in study group with a p value <0.001.
- The blood loss was significantly reduced with a p <0.001.
- The fall in hemoglobin was also significantly reduced with a p value of <0.001.

- Active management significantly reduced the incidence of PPH ($p<0.0001$) and the need for oxytocics ($p<0.0001$) and the rate of blood transfusion ($p<0.0001$).
- Side effects of using oxytocics was very minimal.
- Neonatal morbidity was similar in both the groups.
- Thus active management improves the quality of life by reducing the morbidity and mortality due to PPH.

CONCLUSION

- Active management of third stage of labor should be the routine management of choice for every women expecting to deliver a baby by vaginal route in a maternity hospital.
- IV oxytocics given immediately after delivery of baby is more effective than when given after delivery of placenta in preventing the postpartum hemorrhage. This can easily be timed even by paramedical personnel.
- Controlled cord traction with counter traction is effective in preventing uterine inversion and entrapment of the placenta.
- The need for additional intervention is reduced by giving oxytocic before delivery of placenta.s
- The side effects of methyl ergometrine, rise in blood pressure and nausea and vomiting is not so severe as compared to its benefits and can be well tolerated and controlled.
- Methyl ergometrine is to be avoided in patients with PIH and cardiac patients.

So, in countries with high maternal mortality rate especially due to PPH and higher morbidity, evidence based practices that prevent PPH and its associated mortality and morbidity is an important way to improve women's health.

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PROFORMA

COMPARATIVE STUDY OF ACTIVE MANAGEMENT OF THIRD STAGE LABOR WITH CONVENTIONAL METHOD IN THE PREVENTION OF PPH IN AT RISK MOTHERS

NAME: AGE: UNIT: IP No.

SOCIO ECONOMIC STATUS: DATE, TIME:

MARRIED:

BOOKED/ UNBOOKED

OBSTETRIC FORMULA: G P L A

LMP EDD

COMPLAINTS:

PAST HISTORY:

GENERAL EXAMINATION: anemia +/- Pedal edema +/-

Vitals: PR: BP: RR: Temp:

Breast Thyroid Spine

Height Weight

SYSTEMIC EXAMINATION: CVS RS

P/A

INVESTIGATION: Hemoglobin

Urine albumin sugar

Blood Group and Type

RISK FACTORS: Big baby

Hydramnios

Multiple pregnancy

Anemia

Prolonged labor

Grand multipara

ONSET OF LABOR: Spontaneous

Induced-ARM and oxytocin

PGE_2 gel

PGE_2 gel with oxytocin

DURATION OF LABOR: I stage

II stage

NATURE OF DELIVERY: LN/ LN with Epi/ IVD

MANAGEMENT OF III STAGE: ACTIVE

CONSERVATIVE

DURATION OF III STAGE:

AMOUNT OF BLOOD LOSS:

COMPLICATION: PPH

Retained placenta

Others

Any other drug given: inj. oxytocin

Inj. prostaglandin

SURGICAL INTERVENTION: B-lynch

Internal iliac artery ligation

Hysterectomy

BLOOD TRANSFUSION: No. of units

FALL IN HEMOGLOBIN

OUTCOME FETAL

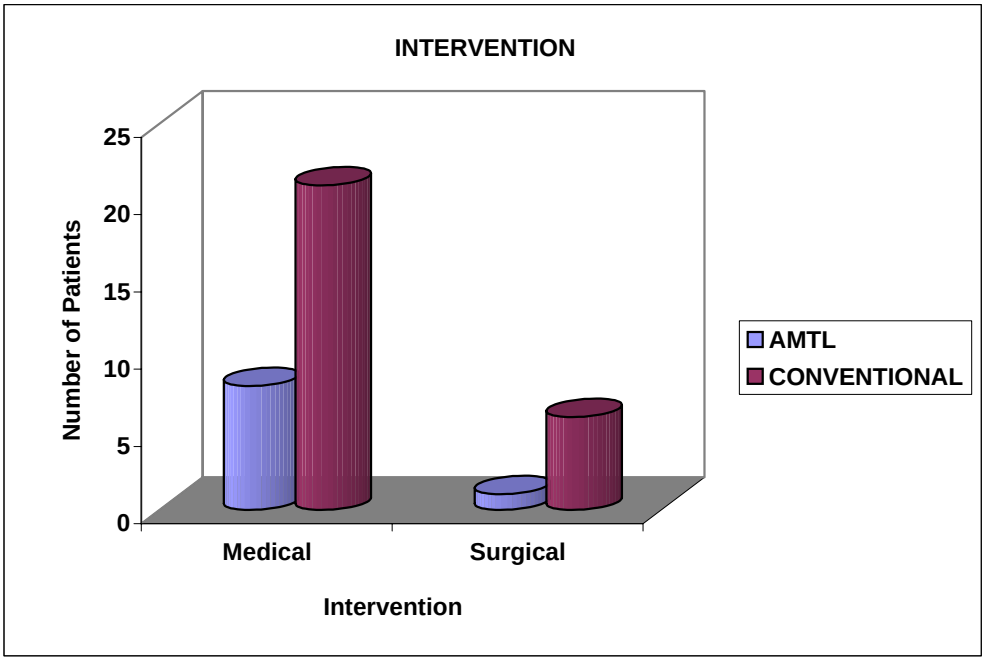
MATERNAL

ACTIVE MANAGEMENT OF THIRD STAGE LABOR

SL. NO	NAME	I.P. NO	AGE	S.E. CLASS	BOOKS	PARITY	RISK FACTOR	ONSET OF LABOUR	NATURE OF DELIVERY	DURATION	BLOOD LOSS	MEDICAL INTERVENTION	SURGICAL INTERVENTION	BL.TRANS	PPH	FALL IN HB	SIDE EFFECTS	BIRTH WT	FETAL COMP
1	Poornima	5233	27	4	1	3	3	1	1	1	125					0.9		1.95	1,3,5
2	Noorunisha	8403	26	5	1	4	4	1	1	4.5	150					0.9		2.8	
3	Alima	7725	23	5	1	3	3	1	1	1	75					0.75		1.85	1,3,5
4	Sasirekha	6744	27	5	1	3	1A	3	2	4.5	150					1.2	1	3.8	
5	Kavitha	1021	33	5	2	4	4	1	1	4	150					0.8		2.7	
6	Karpagam	8347	24	5	1	1	1B	2	2	4.75	150					0.9		2.8	
7	Kowsalya	3855	22	5	1	2	1A	3	3	4	150					0.5		4.1	4
8	Anitha kumari	3214	27	5	1	1	3	1	3	1.25	50					0.5		1.9	1,2,3,5
9	Subha	4278	28	5	1	3	1A	3	3	3	125					0.8		4.2	4,5
10	Ayesha	4078	36	5	1	2	2	4	2	15	350	1				0.9		3.2	2,5
11	Jainam bee	5477	27	5	1	4	4	1	1	4.5	175					0.9		2.6	
12	Parameswari	1864	24	4	1	3	3	1	1	1	150					0.4	3	1.9	1,3,5
13	Deepa	9011	29	5	1	3	2	4	3	7.25	900		B-Lynch	1	1	2.5		3.2	
14	Suraiah	6488	26	5	1	3	1B	2	1	4.5	225					1.1		2.7	
15	Prinitha devi	3324	37	5	1	4	4	1	1	6.75	325					1.7		2.5	
16	Parvathy	4611	34	5	1	4	4	1	1	1.25	50					0.3		2.5	
17	Kokila	3153	28	5	1	3	1A	2	2	2.75	125					0.3		4.1	4,5
18	Renuga	5157	24	4	1	2	1C	1	2	3.25	225					0.9		1.9,2.2	1,3,5
19	Santhana laks	4598	27	5	1	2	1C	1	1	4	250					1	3	2.3, 2.4	
20	Poongavanam	8865	22	5	1	2	2	4	3	6.5	425	1				1.25		3.1	2,5
21	Amsa veni	8917	26	4	1	2	1A	3	3	4	250					1.25		4.2	4,5
22	Vidhya	1309	27	5	1	3	1C	1	1	3	225					1.4		1.8, 2.1	1,2,3,5
23	Hajeera	3571	27	5	1	2	1A	1	3	3.25	225					0.9		4.1	4,5
24	Elavarasi	1543	23	5	1	2	2	2	3	7	325	1				1	2	3.4	2
25	Chitra	7738	19	4	1	1	1C	1	1	1	125					0.9		2.2, 2.5	
26	Indirani	8156	38	5	1	3	2	4	3	7.5	325	1				1.6	3	3.1	
27	Malathi	7628	27	5	1	3	1C	1	1	1.25	124					0.3		1.9, 2.1	1,3,5
28	Arokya mary	3977	28	5	1	3	1A	1	2	3.5	225					1		3.9	
29	Rashitha	6844	29	5	1	3	2	4	3	9	425	1				1.75		3	2
30	Poongodi	6754	31	5	1	3	3	1	1	1.25	150					0.2		1.8	1,2,3,5
31	Vijayalakshmi	2409	22	5	1	3	1B	2	1	1.25	150					0.1	2	2.6	
32	Jeenath	4956	28	5	1	4	4	1	1	1	50					0.2		2.6	
33	Salima	8563	21	4	1	3	2	4	3	7.5	325	1				1.75		3.1	2
34	Vidhya	6299	26	5	1	2	1C	1	2	1.25	75					0.3		2.25, 2.5	
35	Ramani	1011	22	5	1	3	3	1	1	2	175					0.2	2	1.75	1,3,5
36	Sudha	8426	26	5	1	2	2	4	2	7.25	375	1				1.2		3.2	2
37	Sumathy	3087	29	5	1	1	3	1	3	2	175					1.2	3	1.7	1,2,3,5
38	Sarasvathy	7534	21	5	1	1	1B	2	2	4	175					0.3	3	2.6	
39	Jeyanthi	6633	26	5	1	2	1B	2	2	2.75	225					1.1		2.9	
40	Sarala	1678	29	5	1	4	4	1	1	3	175					0.2		2.9	
41	Arul Elizabeth	3623	30	5	1	1	2	4	3	7.25	375	1				0.8		3.4	
42	Jamuna	3523	28	5	1	3	2	4	3	6.5	425	1				1.7		3.6	2,5
43	Vasanthy	2376	32	5	1	2	1C	1	2	1.5	175					0.4	1	1.8, 2.1	1,3,5
44	Asraff	3908	23	4	1	1	1B	2	2	5	225					0.9		2.8	
45	Kasthuri	3066	24	5	1	2	3	1	3	5	175					0.2		1.8	1,3,5
46	Nirmala	4877	26	5	1	3	3	1	1	2	75					0.2	3	1.9	1,3,5
47	Yamuna	6188	24	5	1	4	4	1	1	2.75	275					1	1	2.8	
48	Ramya	1670	22	5	1	2	1C	1	2	2	175					0.2		2.4, 2.6	
49	Bharathi	4167	21	5	1	1	1C	1	1	2.25	50					0.4		2.4,2.5	
50	Bindhu	1457	38	5	1	4	4	1	1	2.25	150					0.2		2.7	

SL. NO	NAME	I.P. NO	AGE	S.E. CLASS	BOOKS	PARITY	RISK FACTOR	ONSET OF LABOUR	NATURE OF DELIVERY	DURATION	BLOOD LOSS	MEDICAL INTERVENTION	SURGICAL INTERVENTION	BL.TRANS	PPH	FALL IN HB	SIDE EFFECTS	BIRTH WT	FETAL COMP
51	Bharisha	3866	27	5	1	1	3	1	3	2.25	90					0.4	3	1.7	1,2,3,5
52	Salomi	2765	26	5	1	2	1B	2	2	4	275					1		2.7	
53	Muthulakshmi	4732	23	5	2	3	3	1	1	1.75	90					0.4		1.8	1,3,5
54	Maragatham	8339	19	5	1	3	3	1	1	2	150					0.9	1	2.35	
55	Shyamala	5575	37	5	1	4	4	1	1	3.5	225					0.2	3	2.6	
56	Desa pattu	4777	27	5	1	3	3	1	1	2	90					0.6		2.25	
57	Gomathi	2235	24	5	1	3	3	1	1	1.75	80					0.8		2.4	
58	Syed Ali Fathi	4467	32	5	1	4	4	1	1	2.75	250					0.4	3	2.75	
59	Benazir begun	3644	26	5	1	2	3	1	3	1.75	150					0.8		1.9	1,3,5
60	Suganthi	8793	21	5	1	1	1B	2	1	2.75	375	1				0.9		2.6	
61	Sasi kala	1654	28	5	1	3	1A	2	2	7.5	375	1				0.9	1	4.1	4
62	Junnu	7955	25	5	1	2	3	1	3	2.25	150					1		2.6	
63	Vanitha	3426	26	5	1	1	1C	1	1	5	250					0.9		2.5,2.5	
64	Jasmine	5634	24	4	1	4	4	1	1	1.75	250					0.9		2.9	
65	Saranya	7043	36	5	1	2	1A	3	3	3	275					0.8	3	3.8	
66	Nagaveni	7085	33	5	1	4	4	1	1	4.5	275					1		2.8	
67	Amala	3806	28	5	1	3	1A	2	2	3.5	275					1.2		4.2	4,5
68	Vaidehi	2488	27	5	1	2	3	1	3	1.75	275					0.9		2.6	
69	Nagaveni	5867	21	5	1	1	1C	1	1	3	275					0.6	1,2	1.75, 2.1	1,2,3,5
70	Jeyamala	6623	29	5	1	3	3	1	1	2.25	125					1		2.5	
71	Sarathi	8257	30	5	1	3	2	2	3	6	425	1				1.3		3.5	2
72	Devimani	7357	26	5	1	2	1A	1	3	2.75	275					0.5		4.2	4,5
73	Farsana	8639	27	5	1	2	3	1	3	2.25	125					0.4		2.4	
74	Karpagam	4822	26	4	1	3	3	1	1	3.5	75					1.2	3	2.45	
75	Mathi	8657	23	5	1	2	1C	1	2	1.75	275					0.9		2.5,2.5	
76	Selvi	2086	28	5	1	4	4	1	1	1.75	75					0.7		2.7	
77	Veena	2679	21	4	1	2	1B	2	2	4	125					1.1		2.5	
78	Kairunisha	9300	29	5	1	3	2	4	3	9	750	1		1	1	2.5		3.6	2
79	Nushrath nish	5623	30	5	1	3	1A	1	2	3.5	275					0.9	3	4.1	4,5
80	Saha padma	1345	23	5	1	3	3	1	1	4	150					0.9		2.5	
81	Gunavathy	6124	24	5	1	2	1A	1	2	4.5	375	1				0.9	3	3.9	
82	Mobina begun	6265	31	5	1	2	3	1	3	1.5	125					0.4		2.6	
83	Chandra	8827	28	5	1	3	1B	2	1	1.75	80					0.6		3.2	
84	Gowri	8235	29	5	1	1	1C	1	1	4.5	125					0.7		2.4,2.6	
85	Uma rani	5155	26	5	1	4	4	1	1	3.25	125					0.4	3	2.6	
86	Nathiya	6511	28	5	1	1	1A	1	3	5.5	450	1				1.9		4.2	4
87	latha	7276	24	5	1	2	1C	1	2	3.5	250					0.9		1.9, 2.25	1,3,5
88	Parameswari	2389	29	5	1	2	3	1	3	1.25	150					0.7	3	2.6	
89	Gajalakshmi	7844	27	4	1	2	1C	1	2	4	150					1.3		2.45,2.5	
90	Sarapadma	4000	24	5	1	3	3	1	1	2.75	90					0.5		2.5	
91		5743	32	5	1	4	4	1	1	3.5	250					1.2		2.5	
92	Valli	7293	22	5	1	2	3	1	3	1.75	150					0.5		2.4	
93	Mageswari	7845	26	5	1	4	4	1	1	3	150					0.7		3.2	
94	Hemlatha	8793	23	4	1	2	3	1	3	1.25	175					0.7		2.6	
95	Jalamma	8044	24	5	1	2	2	4	2	20	450	1				2	3	3.5	2,5
96	Sirisha	1113	23	5	1	3	4	1	1	3	90					0.5		3.1	
97	Devimani	7156	27	5	1	3	1C	1	1	2.75	175					0.5		2.5,2.5	
98	Charumathi	2493	24	5	1	2	3	1	3	2	175					0.7		2.5	
99	Meena	6054	28	5	1	4	4	1	1	3.25	250					1		3.4	
100	Lalitha	1567	25	4	1	3	3	1	1	1.75	175					0.5	3	2.5	
101	amul	7188	32	5	1	3	1A	1	2	3.5	175					1.1	3	3.75	
102	Praveena	7394	30	5	1	1	1B	2	1	3.5	250					1		3.25	

SL. NO	NAME	I.P. NO	AGE	S.E. CLASS	BOOKS	PARITY	RISK FACTOR	ONSET OF LABOUR	NATURE OF DELIVERY	DURATION	BLOOD LOSS	MEDICAL INTERVENTION	SURGICAL INTERVENTION	BL.TRANS	PPH	FALL IN HB	SIDE EFFECTS	BIRTH WT	FETAL COMP
103	Jothy	8593	27	5	1	3	2	4	3	6.5	450	1				2		3.4	
104	Vijayalakshmi	2345	28	5	1	2	3	1	3	1.75	100					0.5		2.5	3
105	Angalammal	3754	29	5	1	3	2	4	2	3	175					1.1		3.5	2,5
106	Nagammal	1789	33	5	1	4	4	1	1	1.75	175					0.5		3.1	
107	suriya	2567	29	5	1	1	1B	2	1	2.75	250					1		3.2	
108	Raja mary	1340	28	5	1	3	1C	1	1	3	250					1.2		1.8, 2.2	1,3,5
109	Tamilarasi	6853	24	4	1	4	4	1	1	3.5	175					0.4		3.1	
110	Gayathri	7497	23	5	1	2	1B	2	1	4.5	175					0.9		3.5	
111	Kavitha	5087	30	5	1	4	4	1	1	3.75	275					1.5		3.2	
112	Rahini	6077	26	5	1	3	3	1	1	1.75	100					0.4		2.4	3
113	Shoba	4698	24	5	1	3	3	1	1	2	175					0.6		2.5	3
114	ShaliniChitra	1345	29	5	1	3	1A	1	2	6.75	375	1				1.4		4.1	4,5
115	Anitha kumari	8138	23	5	1	3	3	1	1	4	175					1.1		2.5	
116	Lakshmi	1780	34	5	2	4	4	1	1	2	175					0.5		3.3	
117	Senthamarai	6344	24	5	1	1	1A	1	3	4.5	275					1		3.8	
118	Veerama	8065	28	5	1	3	3	1	1	2	100					0.4		2.7	
119	Gunavathy	1234	23	5	1	3	3	1	1	1.75	150					0.5	3	2.6	3
120	rukmani	1963	26	5	1	3	3	1	1	2	100					0.2		2.5	
121	Brinda	8967	24	4	1	1	1C	1	1	2	150					0.2		1.9, 1.8	1,2,3,5
122	Latha	1112	30	5	1	3	2	2	3	7.5	450	1				1.7	1	3.6	2
123	Mary	1097	26	5	1	3	3	1	1	1.75	100					0.3		2.4	3
124	Kavitha	1456	37	5	1	3	3	1	1	1.75	150					1		2.5	
125	Yogalakshmi	7429	27	5	1	2	1A	3	2	4	275					0.9		4.2	4
126	Panjalai	3777	24	5	1	2	1A	3	2	7	350					1.2		3.9	
127	Rajeswari	2392	24	4	1	2	3	1	3	2.25	150					0.6		2.8	
128	Revathi	6598	28	5	1	4	4	1	1	2.25	100					0.4		3.2	
129	Radha	2401	22	5	1	2	3	1	3	2.25	175					0.2		2.6	
130	vanimaheswar	1119	27	5	1	4	4	1	1	3.5	175					0.8	1,2	3.25	
131	sasikala	5235	23	4	1	2	1C	1	2	4.5	275					0.7		2.4,2.5	
132	Dhanalakshmi	4378	29	5	1	3	1C	1	1	4	275					2		1.7, 1.9	1,2,3,5
133	manimala	2986	19	5	1	2	1A	3	3	6.5	350					1.3		4.2	4,5
134	Vimala	5976	36	5	1	2	1C	1	1	4.5	275					0.5		2.5,2.6	
135	Malini	5322	26	5	1	3	3	1	1	2.25	100					0.4		2.7	
136	Parameswari	7956	26	5	1	2	1C	1	1	1.75	175					0.5		1.7, 2.1	1,2,3,5
137	Venda	1788	36	5	1	4	4	1	1	1.75	175					0.7	3	3.15	
138	Unnamali	3854	26	5	1	2	1A	3	3	4.5	275					1.4		4.1	4
139	Kanchana	6356	26	5	1	2	1B	2	1	5	250					1.4		3.2	
140	Manonmani	2555	23	5	1	2	1B	2	1	4.75	225					1.2		3.2	
141	Glori	1766	27	5	1	4	4	1	1	3.6	225					1.3	1,2	3.1	
142	Ganga	1230	23	4	1	2	1C	1	1	3.75	225					1.4		1.9, 2.2	1,3,5
143	Nandhini	7634	35	5	1	4	4	1	1	2	90					0.5		3.2	
144	Bhuvaneswari	2875	24	5	1	2	1A	3	2	7	350					1.5		3.8	
145	Nithya	6985	27	5	1	2	1C	1	1	3.5	225					1		1.75, 2.1	1,3,5
146	Sneha	1116	28	5	1	3	3	1	1	2	175					0.5		2.9	
147	Manjula	1763	23	5	1	2	1A	3	2	4.5	350					1.1		4.2	4,5
148	Lakshmi	6977	24	5	1	2	2	4	3	9	800	1		1	1	2.5		3.5	2,5
149	Eswari	6432	29	5	1	3	1A	3	2	4.75	225					1		4.2	4,5
150	Sumathy	7503	23	5	1	2	2	4	2	15	450	1				1.8		3.25	


INTERVENTION
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10
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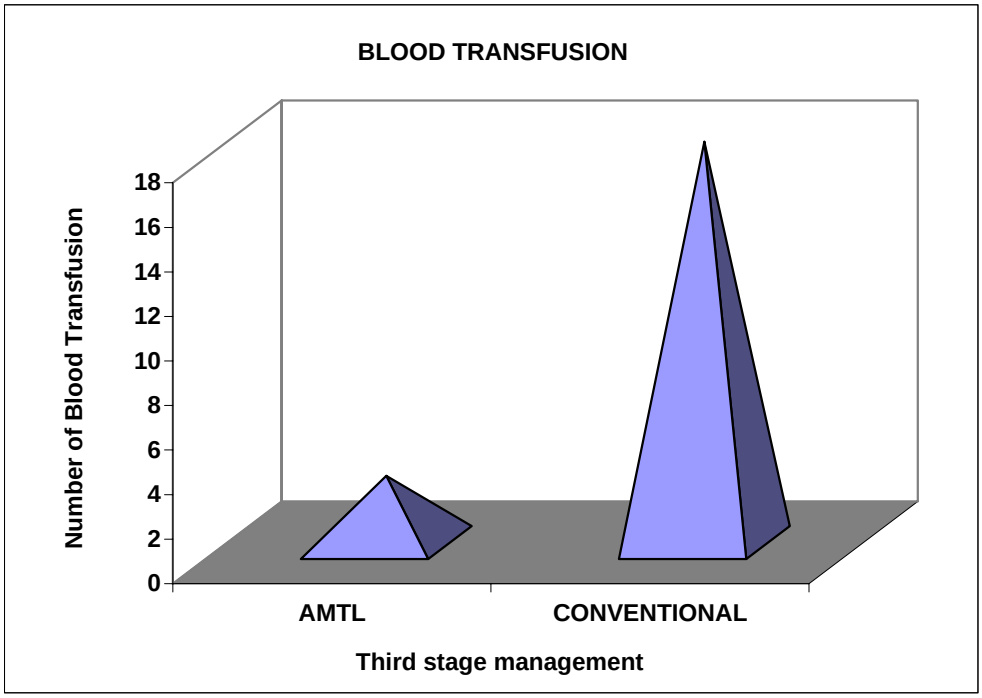
Medical
Surgical
Intervention
AMTL
CONVENTIONAL


BLOOD TRANSFUSION
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10
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6
4
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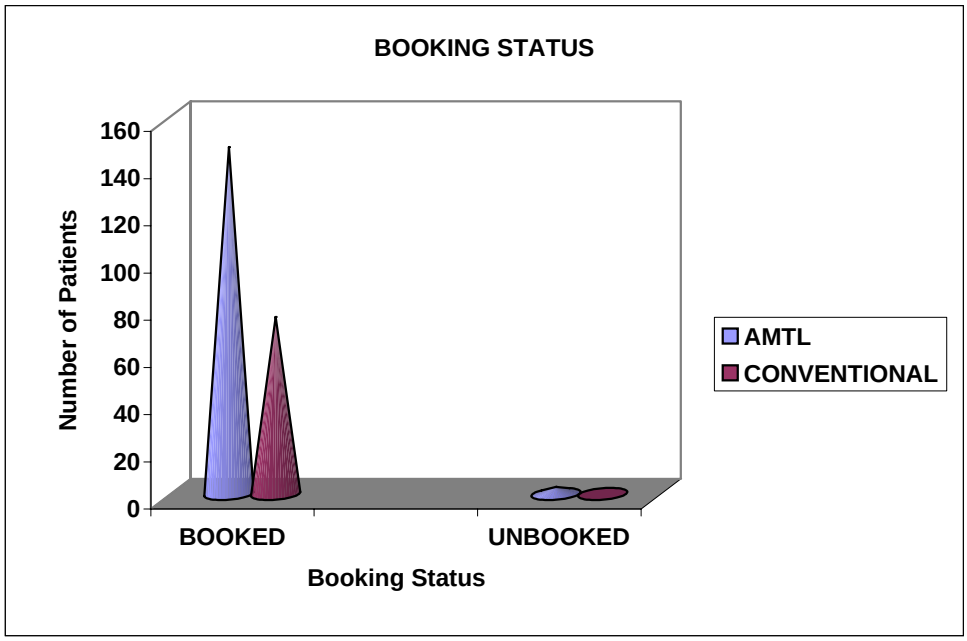
AMTL
CONVENTIONAL
Third stage management


BOOKING STATUS
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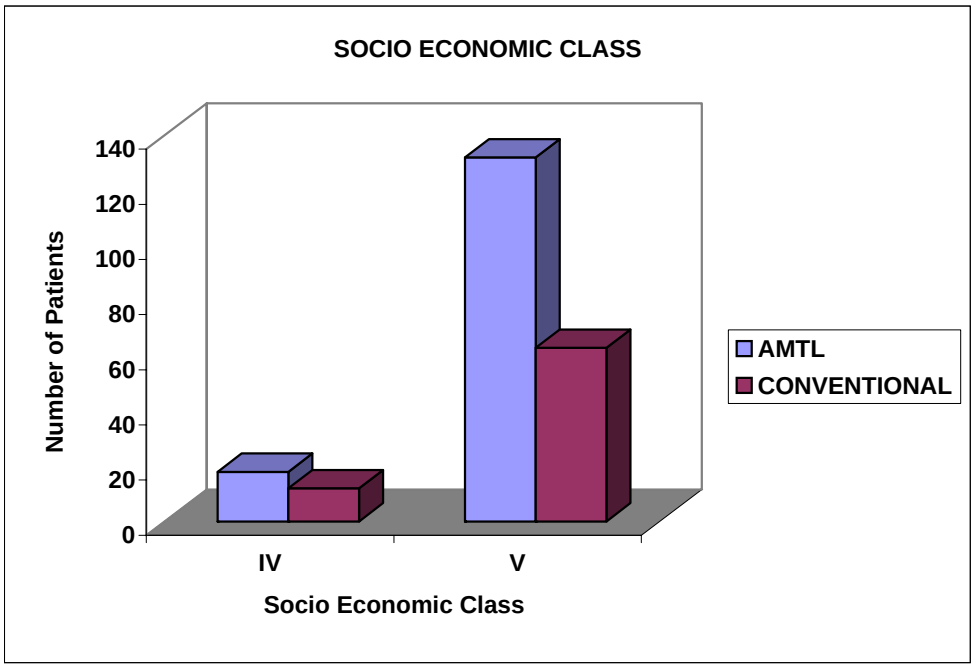
100
80
60
40
20
0
Number of Patients
BOOKED
UNBOOKED
Booking Status
AMTL
CONVENTIONAL


SOCIO ECONOMIC CLASS
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120
100
80
60
40
20
0
Number of Patients
IV
V
Socio Economic Class
AMTL
CONVENTIONAL